208 Nutritional intervention among children with CF

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Objectives: To assess the effect of a six months' implementation of a nutritional intervention protocol on nutritional status in patients with cystic fibrosis.
Methods: Nutritional status of 77 patients with CF (53.2% males, mean age 10.73±6.67 years, was evaluated. Anthropometry was expressed as z-scores for age and sex using WHO Anthro software and classified following the WHO criteria and Frisancho references for MUACp, TSTp and MAMCp. Phase angle (PhA) and body cell mass (BCM) were assessed by BIA. Three-day food intake and 24 h recall (five-pass) were recorded and analyzed using the "Food Processor" software. The intervention protocol was based on specific nutrition recommendations. Fifty-two children were re-evaluated 3 and 6 months later.
Results: The mean value for Weight–Height z score was –0.04 (±1.65), Height–age z was –0.37 (±1.19), Weight–age z was –0.22 (±1.39), BMI–age z was 0.07 (±1.32), MUACz was –0.12 (±1.29), TSFz was 0.06 (±1.03). The mean value of the BMIp was 50.16. The mean PhA values were 4.94 (±0.91). Six months after the initiation of nutritional intervention, energy intake/total energy expenditure ratio (median) was significantly increased ($p = 0.001$). Mean values of Waz, Haz and MUACz were significantly improved ($p = 0.039$, $p = 0.020$ and $p = 0.004$, respectively).
Conclusions: The implementation of a nutritional intervention protocol can improve further nutrition intake, as well as the overall nutritional status, in a short term study. Longer implementation and regular follow-up are expected to further improve outcome.

209 Changes in nutritional status associated with chest exacerbations in children with cystic fibrosis

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Objectives: We hypothesised a negative impact during IV antibiotic treatments (IVs) on nutritional status.
Method: We identified patients' (Pts) most recent IVs associated with an acute chest exacerbation. Weight (wt) and BMI Z scores were reviewed at the start (IVStart) and at the end of treatment (IVEnd) +/– 1 day. This data was also reviewed for the 2 routine clinics prior to the IVs episode (Clinic –1 and –2) and the 2 routine subsequent clinics (Clinic +1 and Clinic +2). Routine clinics occur 3-monthly, therefore the period from Clinic –2 to +2 represents a 9-month period centred around the exacerbation. Pts with any incomplete data were excluded.
Results: 17 pts (11 females, 6 males), median age 9 yrs 7 months were identified. Wt improved during IVs in 14/17 pts. Across all pts there was a significant change in wt of +0.8 kg ($p < 0.01$) and BMI Z score +0.4 SD ($p < 0.01$). Mean duration of IVs was 2.4 weeks (range 2–4 weeks), average gain of + 0.37 kg/wk. Only 2 of the pts received their IVs exclusively as in-pts. Only 2 pts were in-pts for the full IV course and these patients were both in the top quartile for weight gain. There were non-significant trends for BMI Z-score to decrease both prior to and after the IVs (Clinic –1 to IVStart: –0.23 SD; IVEnd to Clinic+1: –0.17 SD) and over the 9 month period containing the exacerbation (Clinic –2 to Clinic +2: –0.15 SD).
Conclusion: Nutritional status improved during IVs for exacerbations. Status tended to falter both before and (more surprisingly) after IV courses. Our results require confirmation in a larger cohort, but suggest targeted intensive nutritional support not only during but following treatment of an exacerbation.

210 Changes in the nutritional status and dietary intake of adults with cystic fibrosis since 1997

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Objectives: To evaluate the nutritional status and dietary intake of an adult outpatient CF population and compare with a similar study conducted in 1997 [1].
Methods: Non-transplanted stable adults with CF were eligible if they had not received intravenous antibiotics in the previous 4 weeks. Height, weight, 4 skinfold thicknesses and mid-arm circumference (MAC) were measured. BMI and %body fat were calculated. Seven-day food diaries were completed. Unpaired *t*-tests were used to compare results with the 1997 study [1].
Results: 59 patients participated (mean±SD age 31.0±9.2 y; mean FEV_1% 67.3±23.7%). Compared with 1997, more patients had a BMI <20 kg/m^2 (14% vs 9%), and more had a BMI >25 kg/m^2 (17% vs 9%). Mean BMI in males increased since 1997. MAC and %fat showed a trend to increase. All parameters were unchanged in females. Energy intake was unchanged in both genders however %energy from fat decreased since 1997 (31% vs 35%, $p = 0.01$).

Table: 1997 vs 2012–13 comparison

	Males			Females		
	1997	2012–13	p	1997	2012–13	p
n [n for dietary intake]	24 [22]	29 [11]		19 [16]	30 [13]	
BMI (kg/m^2)	22.8 (2.8)	23.4 (3.1)	<0.001	22.4 (2.5)	21.6 (2.0)	0.22
% body fat	14.4 (5.4)	17.2 (5.4)	0.06	28.0 (5.2)	27.8 (4.2)	0.88
MAC (cm)	27.9 (3.8)	29.9 (3.9)	0.07	26.1 (2.9)	26.1 (2.0)	1.0
Energy intake (MJ)	12.6 (3.1)	12.0 (3.4)	0.93	9.6 (2.9)	9.2 (2.4)	0.69
Fat intake (g)	122 (37)	99 (28)	0.08	92 (30)	82 (30)	0.38

Data are mean (SD).

Conclusions: The nutritional status of CF males has improved since 1997; while females have plateaued. The stability of energy intake suggests other reasons for increased BMI in males. Gender differences in body image and weight preferences might contribute to our findings and need to be explored, as do food preferences given the reduction in fat intake.

Reference(s)

[1] Richardson I *et al* (2000). *Nutrition* 16: 255–9.

211 Overweight and obesity in the cystic fibrosis Israeli national center

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The median life expectancy of Cystic Fibrosis (CF) has increased to above 40 years old. Currently we observed more and more CF patients with overweight and obesity.
The objectives of this study were to describe the prevalence of overweight and obesity in the Israeli national center and to evaluate the relation between higher body mass index (BMI) and age, lung function, genotype, cystic fibrosis related diabetes (CFRD), pancreatic function and lipid profile.
Methods: We identified 17 CF patients (aged 10–54) at risk for overweight and obesity from 158 patients in the CF Israeli national center. Younger patients with a BMI over the 85th but less than the 95th percentile were considered overweight and patients with BMI greater than the 95th percentile were considered obese. BMI values greater than 25 and 30 kg/m^2 respectively define overweight and obesity in adults. Age, lung function, genotype, CFRD, pancreatic function as well as lipid profile were evaluated.
Results: Of the 158 CF patients aged 10–54, 17 patients (11%) were overweight or obese. 8% were overweight and 3% were obese. Of these patients 8 (47%) were pancreatic insufficiency (PI) and 9 (53%) were pancreatic sufficiency (PS). 4 (23.5%) were obese and PS with mean FEV1 of 95 percent predicted. In PI patients higher BMI is associated with CFRD. Overweight PI subjects were older and had milder genotypes. Lipid concentrations were not related to BMI.
Conclusions: Overweight and obesity in our CF center is increasing. The adult and pediatric CF guidelines on nutrition focus on high fat high calorie CF diet with no recommendations in the CF patients who are overweight or obese.